

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An anaerobic digestion system, comprising a retort vessel for processing a liquor consisting essentially of a liquid and a digestible biomass, a space above the liquor in which liquid vapor and gaseous products of digestion can collect, means for maintaining a vacuum pressure in the space above the liquor, and means for introducing a pressurized feedstock into the vessel at a thermophilic temperature so that the feedstock ~~impacts upon~~ explodes into a concentrated high pressure steam spray and fractured biomass solids that are directed onto the surface of the liquor in a manner which serves to break up any scum on the surface and produce a mixing of the fractured biomass solids and the biomass in the liquor.

2. (Currently Amended) The system of Claim 1 wherein the means for introducing the feedstock introduced includes means for introducing the feedstock into the vessel through the space above the liquor at a temperature on the order of 55°C to 100°C and a pressure on the order of at least about 250 psi.

3. (Currently Amended) The system of Claim 1 wherein the means for introducing the feedstock introduced includes means for introducing the feedstock into the vessel at a pressure on the order of several hundred pounds per square inch.

4. (Currently Amended) An anaerobic digestion process comprising the steps of: processing a liquor consisting essentially of a liquid and a digestible biomass in a retort vessel with a space above the liquor in which liquid vapor and gaseous products of digestion can collect, maintaining a vacuum pressure in the space above the liquor, and introducing a pressurized feedstock into the vessel so the feedstock ~~impacts upon~~ explodes into a concentrated high pressure steam spray and fractured biomass solids that are directed onto the surface of the liquor in a manner which serves to break up any scum on the surface and produce a mixing of the fractured biomass solids and the biomass in the liquor.

5. (Currently Amended) The process of Claim 4 wherein the feedstock is introduced into the vessel through the space above the liquor at a temperature on the order of 55°C to 100°C and a pressure on the order of at least about 250 psi.

6. (Currently Amended) The process of Claim 4 wherein the feedstock is introduced into the vessel at a pressure on the order of several hundred pounds per square inch.

7. (Currently Amended) An anaerobic digestion system comprising a retort vessel for processing a liquor consisting essentially of a liquid and a digestible biomass, and means for introducing a pressurized feedstock into the vessel so that the feedstock impacts upon explodes into a concentrated high pressure steam spray and fractured biomass solids that are directed onto the surface of the liquor in a manner which serves to break up any scum on the surface and produce a mixing of the fractured biomass solids and the biomass in the liquor.

8. (Currently Amended) The system of Claim 7 wherein the means for introducing the feedstock introduced includes means for introducing the feedstock into the vessel at a pressure on the order of several hundred pounds per square inch.

9. (Currently Amended) The system of Claim 7 wherein the means for introducing the feedstock introduced includes means for introducing the feedstock into the vessel at a thermophilic temperature.

10. (Currently Amended) An anaerobic digestion process comprising the steps of: processing a liquor consisting essentially of a liquid and a digestible biomass in a retort vessel, and introducing a pressurized feedstock into the vessel so that the feedstock impacts upon explodes into a concentrated high pressure steam spray and fractured biomass solids that are directed onto the surface of the liquor in a manner which serves to break up any scum on the surface and produce a mixing of the fractured biomass solids and the biomass in the liquor.

11. (Currently Amended) The process of Claim 10 wherein the feedstock is introduced into the vessel at a pressure on the order of several hundred pounds per square inch.

12. (Currently Amended) The process of Claim 10 wherein the feedstock is introduced into the vessel at a thermophilic temperature.

13. (Currently Amended) An anaerobic digestion system comprising a digester having means for processing a biomass liquor in a plurality of successive phases, means for producing a gaseous substance with at least two components, means for separating the components, and means for utilizing the components to collecting gas produced by the digestive process and separating the gas into methane and carbon dioxide components, and means for feeding the methane and the carbon dioxide back to the phases in the digester to control the rate of digestion in the system pH in each of the phases.

14. (Currently Amended) The system of Claim 13 ~~wherein the rate of digestion is determined by controlling the pH in the system~~ including means for individually controlling the amount of methane and the amount of carbon dioxide fed back to each of the phases.

15. Cancelled.

16. (Newly Added) An anaerobic digestion process comprising the steps of: processing a biomass liquor in a plurality of successive phases in a digester, collecting gas produced by the digestive process and separating the gas into methane and carbon dioxide components, and feeding the methane and the carbon dioxide back to the phases in the digester to control the pH in each of the phases.

17. (Newly Added) The process of Claim 16 including the step of individually controlling the amount of methane and the amount of carbon dioxide fed back to each of the phases.